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VOL. LII
No. 1350

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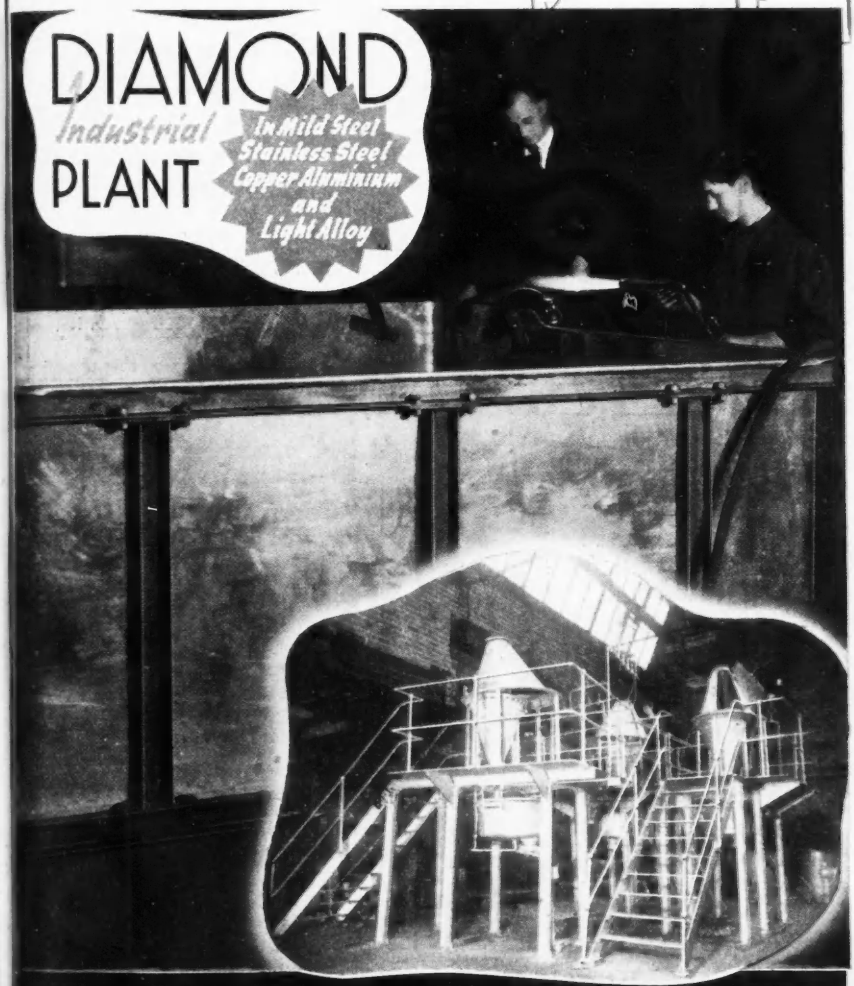

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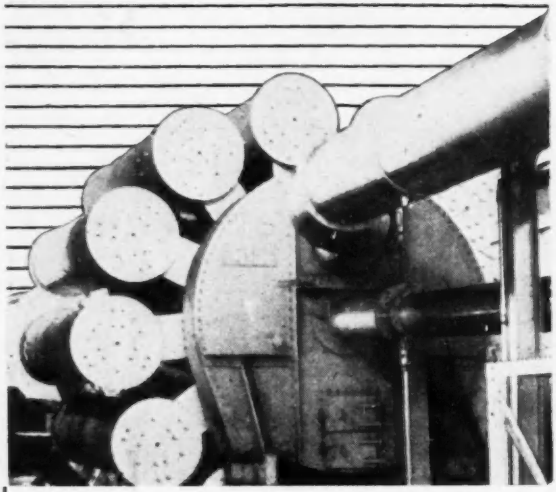

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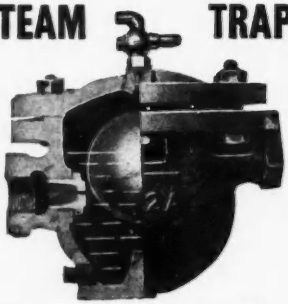

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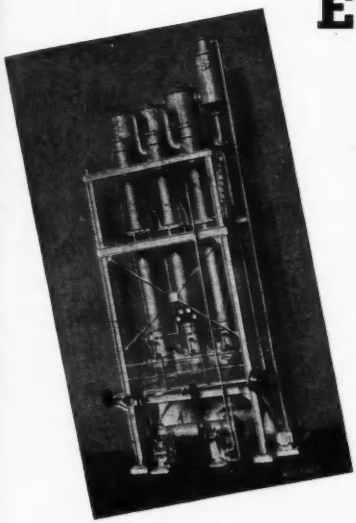

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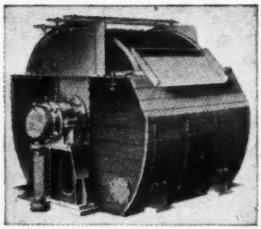

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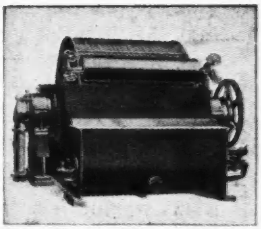

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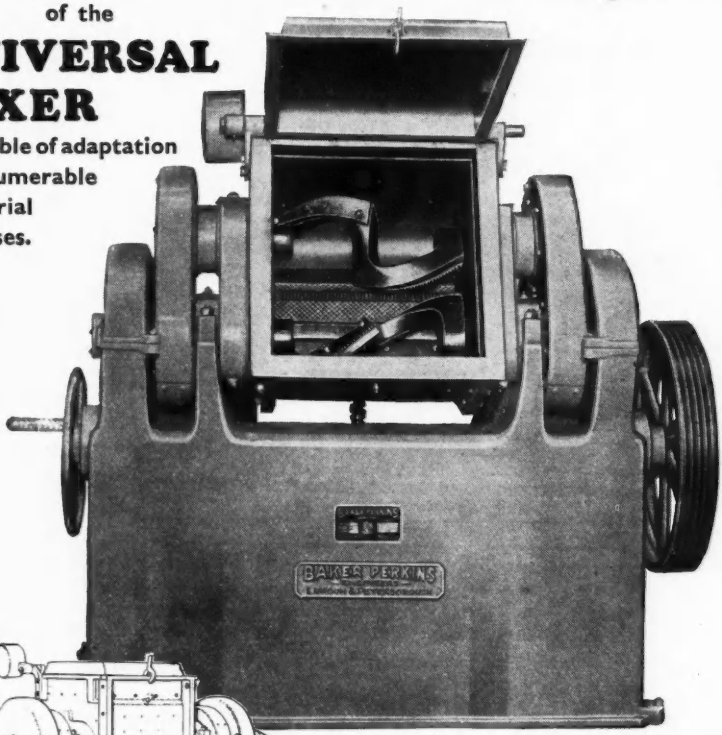

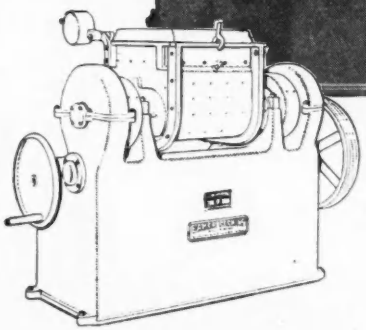

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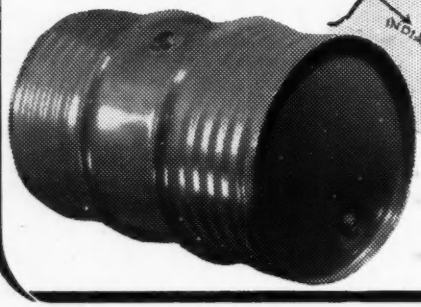

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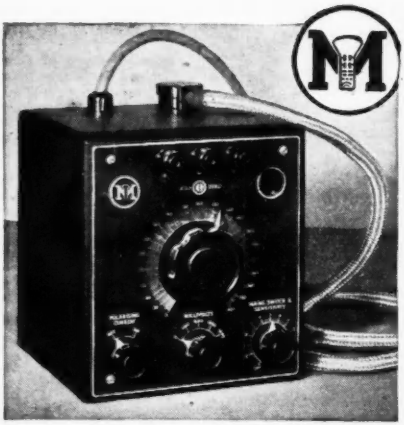

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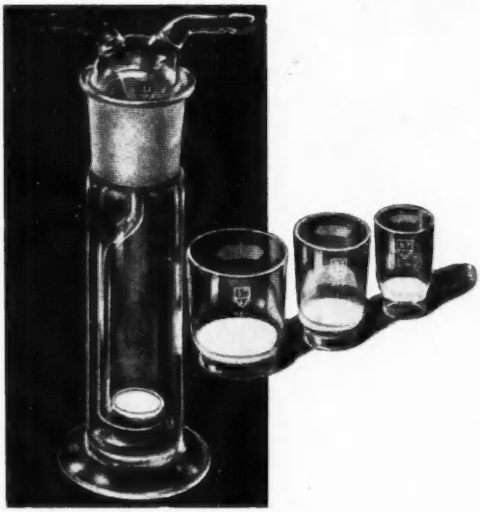

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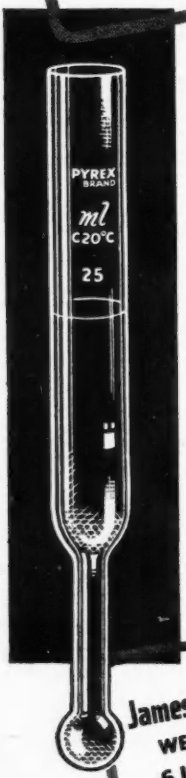

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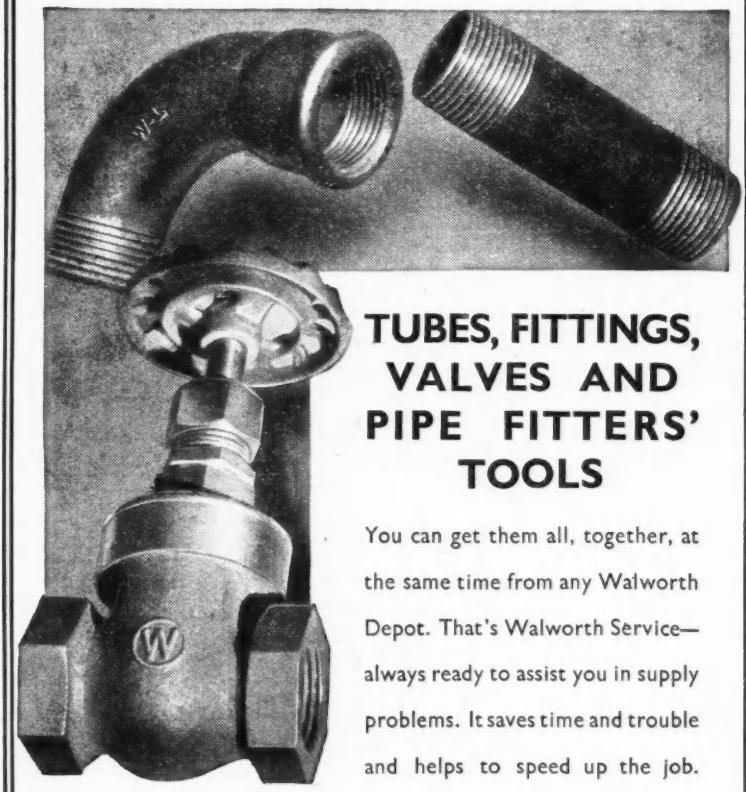

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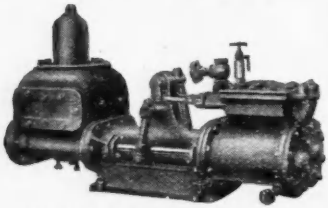

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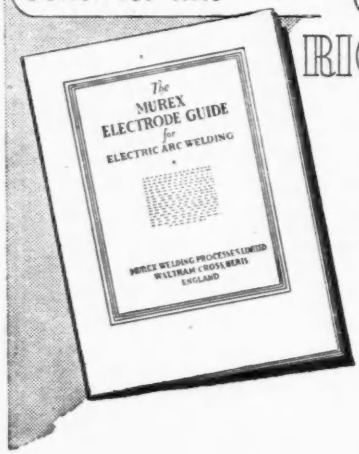

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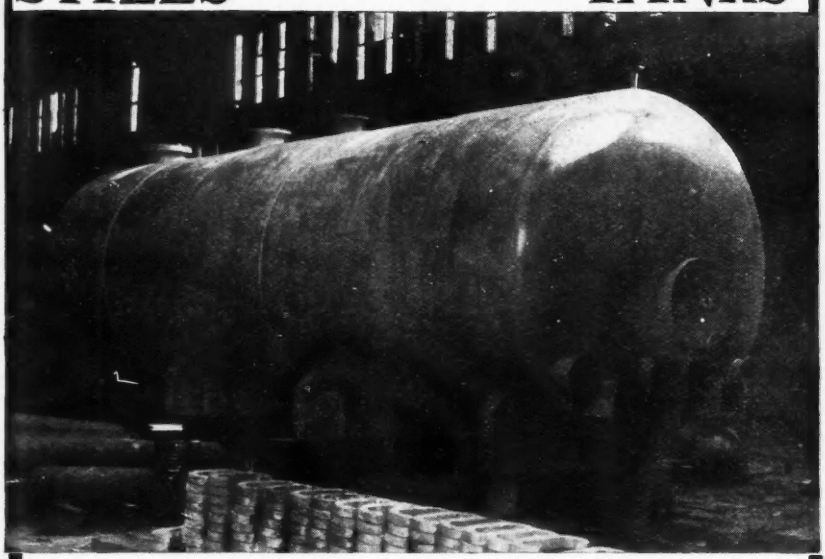

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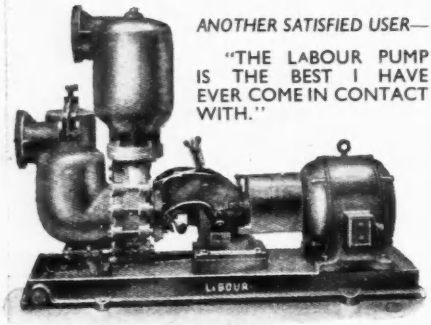

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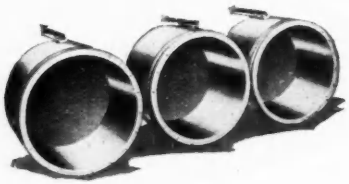

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VOL. LII
No. 1356.

June 23, 1945

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Lives of Great Men

AS we listened to the eloquent discourse on the life of Dr. Baekeland to which Mr. Potter treated us in the first Baekeland Memorial Lecture, we fell to ruminating what purpose is served by a study of the lives of those who have gone before. They have lived out their span, be it brief or long, their deeds are done; it remains for those who remain either to profit by their works, or as in the case of certain international criminals who have lately vanished from the European scene, to clear up the wrongs they have perpetrated and to redress the misery they have caused. Human nature remains very much the same from one generation to another, and there is justification for the belief that by studying human nature, it is possible to learn by experience:

"There is a history in all men's lives,
Figuring the nature of the times deceased,
The which observed, a man may prophesy,
With a near aim, of the main chance of things
As yet not come to life, which in their seeds
And weak beginnings lie intreasured."

That, however, applies to all human nature and in particular to the major characters of history. What, then, is the value of a study of the life of a scientist, of a successful business man, of an inventor? Our answer to that is twofold. In the first place we should reflect that, although so eminent an industrialist as Henry Ford, in one of those misguided moments which occasionally take all men of genius unawares, declared that "history is bunk," there is at least an aesthetic and antiquarian interest in delving into the past and discovering just how things happened. Quite considerable controversy, for example, centres round the invention of the process of coking coal and the inception of the blast furnace together with the use of coke for smelting iron. There is much that we should like to know about the industrial events of the 16th and 17th centuries, and even of the 18th century. But that is not utilitarian, and there are many to-day who discredit anything that is not severely "useful" in the sense of enabling the knowledgeable ones to earn more money, to be more "successful" in life, or to enable the world to live more easily.

Very well, then; let us think only of the utilitarian aspect of the study of the lives of great men. The bare recital of their doings is not of any great utilitarian value so far as one can see. What is of value is the deeper account of their struggles, of the ways in which they met their difficulties and triumphed over them, of the lessons they learned in so doing; and we may apply those lessons to our own problems. George Eliot said that "the happiest women, like the happiest nations, have no history." We do not believe that is true of men, nor of nations, and not generally of women except in the limited sense in which George Eliot meant it. History moulds character; struggle creates the individual character, and from that struggle succeeding genera-

tions may learn—if they will. The intrinsic value of Mr. Potter's account of Baekeland's life lay in his analysis of the lessons which Baekeland himself had learned, and of those we can learn from his experience.

The first is that Baekeland might have been an Englishman or a Scot, by adoption, and if that had been so, this country might have reaped the prodigious reward of his labours which deservedly fell to America. The reason why he did not stay in this country still unfortunately holds good—and can and must be rectified. It is that while he could find laboratories wherein he could study and undertake his researches on the test-tube scale, nowhere could he find a place such as the Mellon Institute or the "Boston Tech," where he could put his laboratory experiments on to a semi-works scale. In America he found these facilities; he would not find them in this country even yet. There is, to-day, a strong demand for more chemical engineers and for greater facilities for training chemical engineers. The new chemical engineering training schools should give these facilities for the study of plant problems and for trying laboratory processes on the larger scale.

When a process has been developed and can be started on the commercial scale, how should one proceed to exploit it? Baekeland found from his experience some very important royal roads to success. One of these is that the manufacture of a new product is the least difficult part of the job; the most difficult is to get it manufactured and used properly by others. In his discovery of Velox photographic printing paper and of Bakelite the same difficulties occurred. "The most important part of the problem we had before us," he said in 1916, "was to give technical instruction to those who were willing to learn, and this technical instruction ranged from the first principles of how to use the product to all the engineering details of the equipment of their plant. I concluded that the best way to avoid failure was to conduct the manufacture of the raw materials to beyond the stage where chemical knowledge or too much experience is required." That is still true to-day, and, as the ramifications of such firms as I.C.I. show, chemical manufacturers must still do a great deal in teaching their customers how to make the best of their product. That is one direction in which the coal industry failed, and it is paying for that failure still.

The choice of business associates is another lesson of Baekeland's career. He chose his associates in every venture, not by the money they were prepared to find, but because of their personal character. As he himself said: "Better do not attempt much if you have, as business associates, only men whom you cannot trust, or who do not trust you, or who irritate or depress you, or who are dangerous by their greed, their recklessness, their superficiality, their weak character, or their general unreliability."

The provision of capital is another important point; it will be doubly important in the years ahead when men will come back from the wars disillusioned, unwilling to be "bossed," and eager to "start on their own." Let them remember Baekeland's words: "A great mistake has frequently been made of starting into a new business with just enough money to get along, provided everything went well. That is one of the surest roads to failure. I know of few chemical enterprises, if any, where the initial expenses were not decidedly higher than what was estimated at first. . . . It is hard work to persuade anybody to advance funds for a business enterprise which encounters

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troubles, except at an entirely disproportionate sacrifice."

Finally, perhaps one of the outstanding lessons is that he who would succeed must expect to weather severe storms. Baekeland had his full share of those, but came through with colours flying to make his fortune from the smallest of beginnings. He was smitten by illness at a critical period of his life; when just starting his first factory (to make Velox) he ran into the severest trade depression that America has known; he had difficulty finding facilities for his work; he found extreme difficulty in persuading people to take up anything new. But he was never daunted. There is a lesson for Britain in Baekeland's life, and we are indebted to Mr. Potter for disclosing it.

NOTES AND COMMENTS

Technical Committees Wanted

IN our current issue we publish the text of an address delivered at the recent annual meeting of the Association of Scientific Workers by Dr. N. Levy. In his speech, Dr. Levy discussed the prospects and potentialities of the British chemical industry, and while he readily acknowledges the great advances that have been made in the industry, he is not sparing of criticism in certain directions. In common with other members of his political Party, he demands that our coal resources shall pass into national ownership and he claims this to be a necessity for the well-being of the chemical industry. He does not ask for the "nationalisation" of the chemical industry itself; instead he makes the much more reasonable demand of an expansion of the system of technical committees within the industry.

Civil Servants and Chemicals

IT is interesting to study his remarks alongside the recent speech of Lord McGowan (*see* THE CHEMICAL AGE, June 2, p. 477), especially the concluding paragraphs in which the chairman of I.C.I. expressed his opinion about the future. On the whole, it does not seem impossible that some plan could be evolved for the future of the chemical industry which would be acceptable to both parties, though Lord McGowan might not be prepared to accept in full the suggestion of Dr. Levy that the Government's synthetic nitrogen plants should continue to be worked by civil servants. We have the honour of being acquainted with a number of the "civil servants" who have been employed in R.O.F.'s during the war, and we are bound to admit that much of the efficiency which they undoubtedly achieved was brought about by them through the employment of the good commercial practices which they had learnt in a previous incarnation, before the exigencies of war had directed them into the State's service. If some ingenious mind would devise a scheme whereby the industrial civil servants of the future could enjoy a sort of "grand tour" of factories, etc., working under private enterprise, before becoming established in Government employ, the opponents of State enterprise would have less cause for apprehension.

Sequel to "Pluto"

NOW that the story of "Operation Pluto" has been released, it is also possible to make known an interesting sequel. While the pipe-lines carrying fuel to our armies beyond the Channel were naturally of very sturdy construction, they were none the less susceptible to damage from such objects as ships' anchors, and towards the end of 1944 a number of lines had begun to leak or had suffered actual fractures. The precise location of the damage was not known and no method was available for accurate detection, such as would enable divers to be sent down to effect repairs. The Petroleum Warfare Department bethought them of the dyestuff Fluorescein LT, used to assist in rescuing airmen forced down on the sea. Why should not fluorescein solution be pumped through the damaged pipe until it emerged on the sea's surface and so reveal the presence of the fracture? Enormous quantities of the solution would, however, be required to colour a

sufficient volume of sea water, which would necessarily be from the bottom of the sea up to the surface, in order to be observed at any distance. I.C.I. were approached, and experiments were at once carried out to see whether a solution of Fluorescein LT could not be produced which would rise to the surface of the sea without mixing with it and then spread out over a large area.

Detection of Oil Leaks

SUCH a solution was evolved and arrangements were made to try it out in the damaged pipelines. Preparation of the large quantity of the solution involved was undertaken on the site of the pumping station by an R.A.S.C. unit under supervision. In spite of desperately cold weather which froze the ingredients in their containers and choked the pumps with ice, the experiment was entirely successful. The solution was introduced into one of the damaged lines and at the same time ships of the Royal Navy, assisted by a "Walrus" spotting plane, began to move out along the course of the submarine pipes. In due course, the fluorescent patch appeared on the surface. One end of the fracture had been found. As the ends had become separated by an appreciable distance, perhaps due to dragging by ships' anchors, it was found necessary to ship quantities of the liquid to France and repeat the operation from the opposite shore. Once again the exact location of the fractured end was revealed. Without the assistance of this device, employed on more than one occasion, there is no doubt that "Pluto's" efficiency must have been seriously curtailed.

A Further Warning

IN our issue of June 2, we claimed to be the first industrial weekly in this country to publish a representative series of photographs illustrating the present state of the chemical industry in Germany. On the same occasion we uttered a warning against drifting along by a series of *ad hoc* decisions instead of proceeding in accordance with a well-defined and workable inter-Allied policy. Reference was also made to General Clay's assurance of the prospective destruction of all German plants other than those serving essential civilian needs. It is possible that a beginning has already been made with such a policy, but we have certainly not yet heard of it, nor, we gather, has anyone else in this country—and, to judge by the report published in this issue (p. 549), something quite different is in the wind. During the war, we could read almost daily in the British Press accounts of events in Germany; since VE-Day, however, there has been a conspicuous absence of news about Germany's internal economy, especially the industrial sector. It is high time that the black-out was removed on news of this highly important nature, as decisions are now being taken in a way that, at best, can only be described as spasmodic, although these decisions will affect the well-being of millions all over the world and will profoundly influenece the chances of maintaining Allied unity and peace.

Scientists' Moscow Visit

AT the invitation of the Academy of Sciences of the U.S.S.R., a party of 21 scientific men and scholars left England on Thursday last week to participate in the celebration of the 220th anniversary of the founding of the Academy, which to some extent was due to Peter the Great's visit to this country in 1698 and his meeting with prominent members of the Royal Society. Chemistry was represented in the party by Professor N. K. Adam, Dr. E. M. Crowther, Professor F. G. Donnan, Professor C. N. Hinshelwood, Dr. W. G. Ogg, and Professor Sir Robert Robinson. Owing to a fantastic piece of mismanagement, eight of the original party—including Professor R. G. W. Norrish and Professor E. K. Rideal—were at the last minute refused their permits to leave England, the reason given being that the work they were doing for the war against Japan was of too great importance for them to be released at the moment. We have no reason to suppose that the cause of this blunder was anything more than lack of co-operation between the Government departments concerned; but Opposition organs have not lost the opportunity of making political capital from this extraordinary instance of official maladroitness.

Raw Materials for Plastics and Synthetic Rubbers—III

Untapped Sources of Supply

by D. D. HOWAT, B.Sc., Ph.D., F.R.I.C., A.M.I.Chem.E.

(*Continued from* THE CHEMICAL AGE, *June* 16, 1945, *p.* 520)

NEW sources must be found if British chemical industry is to acquire anything approaching those quantities of raw materials called for in large-scale production of plastics and synthetic rubber. Experience in countries abroad has shown that part of the needs in raw materials may be met by more efficient utilisation of the gases produced from both coal-gas retorts and coke-oven plants. Every plastics chemist will agree that burning these gases, even in the most efficient burners, represents a loss of valuable raw material.

According to the latest returns,[20] the production of coal gas in 1943 was 298,431 million cu. ft., using 20,900,000 tons of coal. During the same year an identical quantity of coal was treated in coke ovens for the manufacture of metallurgical coke. A reasonable assumption is that nearly 240,000 million cu. ft. of coke-oven gas were produced simultaneously. For many years past, grave doubts have been expressed as to the proper industrial utilisation of coke-oven gas. In the annual report of the chief inspector of mines for 1938 it was stated that, of a total production of 198,418 million cu. ft. of coke-oven gas, 7087 million cu. ft., or over 3.5 per cent., were completely wasted. Even this does not represent the whole truth, for in industrial plants in the West of Scotland, at least, and probably in many other districts as well, coke-oven gas was being used to preheat blast furnace stoves, no other outlet having been found for this valuable raw material. As ordinary blast-furnace gas with a calorific value of 100 B.Th.U. was available in ample quantities for this purpose, the waste of fuel is obvious, to say nothing of the waste of chemical raw materials. Sale of coke-oven gas to gas-works has increased from 29,621 million cu. ft. in 1938 to 46,992 million cu. ft. in 1943,[20] an increase of from 13 to 21 per cent. of the total make of coke-oven gas disposed of in this manner. Even now, however, coke-oven gas constitutes a rich potential source of chemical raw materials, the possibilities of which have not been adequately understood or exploited.

In this connection, considerable interest attaches to a recent paper presented to The Institution of Chemical Engineers by J. Watson Napier[21] describing plant now operating in Britain for the manufacture of synthetic ammonia from coke-oven gas. Some attention is directed to the gas separation plant in which all the other constituents of the coke-oven gas are removed by liquefaction, leaving a mixed gas fraction to which the requisite amount of nitrogen is added to give the required 3 to 1 ratio of hydrogen to nitrogen. During the three-stage liquefaction process, as shown in Fig. 7, three separate fractions are produced, the following table giving the volume and composition of the different fractions.

TABLE IV

VOLUME AND COMPOSITION OF FRACTIONS PRODUCED FROM COKE-OVEN GAS

Basis: 100,000 cu. ft. of raw coke-oven gas at N.T.P.

Composition % of vol.	*Raw coke-oven gas*	*Ethylene*	*Methane*	*Carbon monoxide*	*Mixed gas*
H_2S	1.0	Nil	Nil	Nil	—
CO_2	2.2	Nil	Nil	Nil	—
C_3H_9	0.4	5.6	0.2	Nil	—
C_2H_4	2.9	44.5	—	—	—
O_2	0.2	0.7	1.7	2.0	—
CO	7.6	0.3	14.5	27.5	—
H_2	52.5	1.9	3.8	3.0	75.0
CH_4	27.0	23.2	70.4	2.4	—
C_2H_6	2.0	21.0	2.1	—	—
N_2	4.2	2.3	7.1	65.1	25.0
Vol. in cu. ft.	100,000	5780	35,180	8310	66,210
Cal. value: B.Th.U./cu. ft.	532	1409	775	125	271
Total B.Th.U. in given volume			53,200,000		

The carbon monoxide fraction is unimportant, being produced merely by the use of liquid nitrogen to wash out residual traces of carbon monoxide from the mixed gas. Removal of carbon monoxide down to a residual content of only about 10 parts per million is essential before the mixed gas passes to the catalytic chambers. Essentially, this process may be considered as consisting of both separation and concentration, giving concentrates of ethylene and of methane, while separating a mixed gas for synthetic ammonia manufacture.

In the light of these data the possibilities

may be considered of making available chemical raw materials by treating a substantial volume of coke-oven gas by this process. Assuming that 20 per cent. of the total make of 240,000 million cu. ft. of coke-oven gas was treated, the following table shows the volume and tonnage of the different chemical raw materials produced and the concentration of each in the given fractional volume.

TABLE V
VOLUME OF COKE-OVEN GAS TREATED: 48,000 million cu. ft.

Fraction	*Concentration of major component % by vol.*	*Vol. of fraction (millions of cu. ft.)*	*Tonnage of product made available in concentrated fraction*
Ethylene ...	44.5	2610	43,000
Methane ...	79.0	15,750	210,000
Hydrogen in mixed gas	75.0	29,794	54,800

An addition of 43,000 tons to the available supplies of ethylene would be a substantial contribution. Very roughly, one ton of ethylene will produce two tons of polyvinyl chloride, so that production of polyvinyl chloride from the ethylene fraction would be close on 100,000 tons, representing even at the present American price of 2s. per lb. an annual revenue of £22,000,000. In this country, polyvinyl chloride costs £500 per ton, so that the revenue obtainable may be much greater.

Processes for the production of numerous organic intermediates from methane have been developed on a large scale both in Germany and the U.S.A. Hydrocyanic acid, methanol, formaldehyde, methyl chloride, and methylene chloride have all been produced commercially from methane, while, as already indicated, the most revolutionary development has been the production of acetylene.

Economic Use of Coal

In the synthesis of ammonia from the hydrogen in coke-oven gas, Napier has shown that this constitutes the most economic method of hydrogen production from the point of view of coal utilisation. If the process is considered essentially as one of nitrogen fixation, then the equivalent coal requirements per ton of nitrogen are as follows:

Method of Hydrogen Production	*Tons of coal/ton of N*
Steam-iron process	4.02
Electrolytic process	5.08
Water-gas process	3.62
Coke-oven gas separation process	2.72

When all these facts are taken into consideration—available supplies of coke-oven gas (only one-fifth of which is involved in the preceding calculations), the synthesis of ammonia, and the production of concentrated supplies of ethylene and methane—the process is obviously worthy of careful investigation and offers very interesting possibilities of increasing raw material supplies.

Hitherto in the discussion of possible sources of raw materials, attention has been directed to the more efficient utilisation of coal, to carbonisation and to the separation and recovery of unsaturated gaseous hydrocarbons. Although the limit of expansion has not been reached in any of these processes, it is fairly obvious that even under the conditions suggested the available supplies of raw materials do not reach very large proportions, at least in comparison with American production. In planning on a long-term basis for the development of the plastics and synthetic rubber industries in Britain, estimates must be of the order of a million tons, not a hundred thousand. If this is so, how may the gap be bridged between the supplies of raw materials from coal carbonisation (tars, benzols, gases) and from carbide manufacture, and the large quantities necessary to sustain an industry of the magnitude indicated? Probably the production of coal could be expanded and carbonisation plant provided, but the effort entailed would be impracticable, involving uneconomic inroads into our national resources.

Oil-Refining Products

Before the present war the total consumption of petroleum products in Britain was about 12,000,000 tons, of which about 10,000,000 tons were imported as fully refined products. Developments in the petroleum refining industry have progressed amazingly during the past few years, but in spite of the increase in the number and complexity of the refining operations, wastage is very slight, one ton of crude petroleum yielding about 98 per cent., by weight, of useful products. A substantial percentage of the valuable by-products of the refining operations, particularly cracking, reforming, and hydrogenation, are unsaturated gaseous hydrocarbons, such as ethylene, propylenes, butylenes, and amylenes. These gaseous by-products have been described as the "very bricks of the new synthetic chemistry."[22] A great part of the extraordinary expansion of the plastics and synthetic rubber industries in the U.S.A. must be attributed to the possession of a plentiful supply of these "chemical bricks." One result of the phenomenal American development of these industries has been to direct increased attention to the possibilities of synthesising other fine chemicals from oil-refining by-products. It would appear that the whole focus of industrial organic chemistry is changing from coal to oil. Clearly any acceleration of this development will involve an additional handicap for British chemical industry. Many well-argued theses have been advanced for the establishment of a really large oil-refining

industry in Britain. After the war, very considerable repairs and modifications are bound to be necessary in those oil refineries in Iran and Trinidad from which the major quantities of British refined petroleum supplies were obtained. The time is now ripe to consider whether this is not the golden opportunity to set up such an industry here in Britain. Opposition must be expected to such a proposal, but the development of new industries in Britain with increased employment and improved living standards should not be prejudiced by private interests.

Dr. Kind, in his ably-argued case,[23] estimates that if an oil-refining industry was established to treat 10,000,000 tons of crude oil annually, over 1,000,000 tons of unsaturated hydrocarbon "chemical bricks" would be made available for use in synthetic chemical industries in this country. On the existing figures a saving of over £20,000,000 (£2 per ton) in foreign currency would be effected by buying crude instead of refined products. With the production of about 1,000,000 tons of plastics and synthetic rubbers, an annual revenue of well over £100,000,000 would be secured. In addition, completely new and large-scale industries would be established, the industrial potential of the country would be immeasurably increased, heightened employment and large wage bills would be secured, and a definite rise in the standard of living of a large group of workpeople would follow.

From one to two million tons of tar produced by the low-temperature carbonisation process could be hydrogenated and refined by this new industry, yielding substantial additions to the supply of motor spirit and also contributing to the output of unsaturated gaseous hydrocarbons. Were this quantity of tar made available by the means indicated, a saving of over 500,000 tons of imports of crude oil could probably be effected. This would reduce the expenditure of foreign currency by £1,500,000 to £2,000,000. If private enterprise is not sufficiently alive to the benefits that could be secured by such a course, is it too much to ask that the Government, as 50 per cent. shareholder in the Anglo-Iranian Oil Co., Ltd., should give a definite lead and insist at least on making a beginning in the establishment of this new industry in this country?

Experience in Europe before the war proved that the tendency everywhere was to provide refineries in the consuming centres, importing only crude oil. During 1938, 87 per cent. of the oil requirements of France were refined in that country, while in Italy 58 per cent. of the requirements were locally refined. As a rough estimate, Moore[24] gives a figure of £3 to £4 per ton of oil throughput per year as the capital cost of modern oil-refining plant. Therefore, plant for the treatment of the 10,000,000 tons of crude oil in Britain will require the expenditure of £30,000,000 to £40,000,000. To utilise adequately the gaseous unsaturated hydrocarbons from the refineries for the manufacture of plastics, synthetic rubbers, and

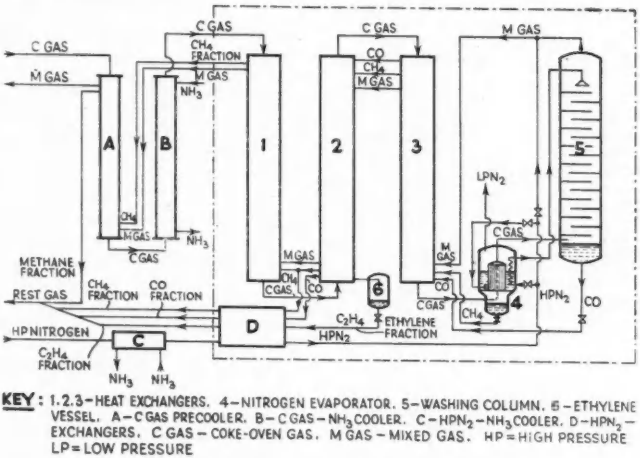

Fig. 7. Flow-sheet showing the separation by liquefaction of the constituent fractions of coke-oven gas, with final production of hydrogen-nitrogen "mixed gas" having the correct ratio of constituents for ammonia synthesis (NAPIER).

other purposes will entail the further expenditure of a similar sum. Heavy capital outlay is involved initially and the amortisation must be taken at 10 to 15 per cent., but the saving in foreign currency and the sale of large tonnages of plastics and synthetic rubbers should ensure an adequate return.

Conclusions

To sum up, there are a number of ways in which the supplies of chemical raw materials for the plastics and synthetic rubber industries may be secured in the large quantities necessary.

1. The adoption of the recommendation by the Hydrocarbon Oil Duties Committee of the payment to the chemical manufacturer of an allowance of 9d. per gallon in respect of indigenous oils used as raw materials in chemical synthesis should prove a real stimulus to the expansion of the plastics and synthetic chemical industries. In this way, increased recovery of benzol and other essential raw materials from gases and tars should be made a more attractive proposition and thus meet the needs of an expanding market.

2. When strong competition for available supplies occurs among different industries, a control panel should be established to secure equitable distribution.

3. The establishment of a large-scale low-temperature carbonisation industry, if aided by a fuel-rationing scheme and backed by a Government subsidy, should prove of very considerable value as a source of raw materials, particularly tars and olefines.

4. Development of a large national scheme for hydro-electric power generation on the lines proposed by the Cooper Committee for the North of Scotland and by the Severn Barrage Committee, with an output of over 6000 million units annually, will permit the establishment of electro-chemical industries on a large scale. A proposed target of 250,000 tons of calcium carbide will absorb 13.5 per cent. of the total output from these new schemes.

5. More efficient utilisation of coke-oven gas, involving the separation and concentration of ethylene, methane, and hydrogen. Plant experience in Britain has proved the value of this procedure. Treatment of 20 per cent. of the present coke-oven gas output will yield 43,000 tons of ethylene, 200,000 tons of methane, and 58,000 tons of hydrogen.

6. Establishment of an oil-refining industry in Britain capable of treating 10,000,000 tons of crude oil annually would make available 1,000,000 tons of unsaturated gaseous hydrocarbons, capable of being transformed into over 1,000,000 tons of plastics and synthetic rubbers.

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Totaquina

Increased Output in Tanganyika

THE development of the totaquina industry in Tanganyika is described in a recent message from the territory which says that the amount sold in the last half of 1944 was 20 times that sold in a similar period of 1942. Totaquina is a mixture of the alkaloids from the bark of various species of cinchona and has been increasingly in demand on account of the scarcity of quinine.

Tanganyika totaquina manufacture was started at Dar-es-Salaam in 1942. Since then there has been a steady increase in production of bark and of totaquina, rising from £300 worth at the end of 1942 to £6500 worth in June-December, 1944. The manufacturing process is relatively simple and is carried out with plant made or acquired locally. The dried cinchona bark is powdered, treated with lime water, and extracted with gas-oil in the presence of caustic soda. The alkaloids are then extracted from the solution in oil by agitation with dilute acid and the solution filtered. The alkaloids are next precipitated by an alkali, filtered off, and dried.

Totaquina is supplied as a powder, soluble in dilute acid to produce the equivalent of liquid quinine mixture, or as five-grain tablets. Tanganyika totaquina contains a far higher proportion of quinine than is required by the British Pharmacopœia, quinine and cinchonidine constituting about 60 per cent. of the total. The Dar-es-Salaam factory is now supplying Kenya and Uganda with totaquina which is surplus to the present requirements of Tanganyika, but local consumption is rapidly increasing as the efficiency of the drug becomes more widely known.

British Chemical Plant Manufacturers

Association's Annual Meeting and Luncheon

THE annual meeting of the B.C.P.M.A. was held at the Connaught Rooms, London, W.C.2, on June 15, with Mr. Keith Fraser in the chair. The period under review is the first full year at 26 Portland Place, London, W.1, and with the appointment of Dr. Hoblyn as secretary and other additions to the staff, the Association has been able greatly to increase its activities.

Points from the Report

Under the chairmanship of Mr. W. R. Beswick, the Enemy Chemical Plant Industry Committee studied the problem of controlling the German chemical plant industry and submitted a report on the subject to the executive committee. These deliberations resulted in the issue of a memorandum in which the Association outlined its views on the security and economic aspects of the control of the enemy industry and stressed the importance of an early investigation of key firms. This memorandum has since provided a basis for discussions with the Government, arising out of which the Association was requested to provide all the information it could regarding German chemical plant designers and makers. Members readily responded to this request and from the information thus obtained comprehensive alphabetical, geographical, and products classification lists have been prepared and are now being forwarded to the British Element of the Control Commission. Discussions are proceeding with the Government regarding the early investigation of special targets, the provision of chemical engineers to assist in the long-term control of the German industry and visits of members to works in Germany at a later stage.

Disposal of Surplus Plant

Realising that the disposal of surplus Government-owned chemical plant other than through the proper channels of the industry might have serious repercussions on members' business, the executive committee appointed a special sub-committee under the chairmanship of Mr. B. N. Reavell to study this problem, and as a result a memorandum has been submitted to the Government. The Association wishes to avoid surplus plant being broken down and sold for purposes for which it was not originally designed for fear it might bring disrepute to the firms who made it, and considers that such surplus plant should be dismantled by experienced chemical engineers, reconditioned (where reconditioning is necessary) by the original makers or by similarly qualified contractors and sold " in course of trade " for duties it is capable of performing. Contact has been maintained with the Government who have appointed an inter-departmental panel to deal with the matter.

The publicity sub-committee under the chairmanship of Mr. W. R. Beswick has framed recommendations for the publication of a new and improved edition of the Directory of Members which, owing to paper restrictions, has not appeared since 1941.

Exports

During the year the Association acted as the Government's agency for controlling members' exports of chemical plant. This entailed the scrutiny and discussion with the Board of Trade of each individual order but, thanks to the Association's close and harmonious relations with the Board, facilities have been provided promptly in all approved cases and the Association has expedited the subsequent issue of export licences when they have been required.

The opportunities that are opening out for the export of chemical plant are so promising and the national need for increasing exports is so great, that the time has come for framing an active policy and in this connection members' attention was drawn to the fact that although a few larger members have well-established export organisations the majority have not the means individually to cover all prospective markets effectively. To overcome this difficulty members were invited to consider the possibility of co-operating to form groups within the Association to evolve stronger export selling organisations than would otherwise be possible. A number of replies have been received indicating willingness to explore such possibilities and the Director is giving them his attention. It is evident that the chemical plant industry as a whole is inadequately represented in most overseas markets and as opportunity arises members are being put into touch with likely local representatives.

It is reported that the Association is becoming the focal point for visitors from overseas who have chemical plant interests. As a result it has been possible to put members in touch with many overseas visitors. That the value of making these contacts through the Association is appreciated by Government Departments is evidenced by the way in which the Association is called into preliminary discussions with delegations from overseas and it is anticipated that the Association will play an increasingly important rôle in this direction.

In pursuance of a policy of developing

the more coherent inter-relationship of industrial organisations the B.C.P.M.A. has joined the B.E.A. as an association member and Mr. Fraser serves on its council and its policy committee, and is chairman of its Enemy Industries Committee. Mr. Beswick serves on the B.E.A. Publicity Committee and acts as Mr. Fraser's deputy on the council. The Association became affiliated to the F.B.I. early in the year under review. This has proved of unquestionable advantage to the Association. Mr. Fraser is one of the B.E.A. representatives on the F.B.I. Grand Council and Mr. Beswick and the director represent B.C.P.M.A. on that body. The director is also a member of the F.B.I. Russian Committee.

Relations with the Association of British Chemical Manufacturers have continued to be close and cordial; the chairman of A.B.C.M. sits as an observer on the B.C.P.M.A. Enemy Chemical Plant Committee, and Mr. Fraser sits on the A.B.C.M. equivalent committee.

Chemical Engineering Education

Representations made by the B.C.P.M.A. in co-operation with the Institution of Chemical Engineers, the Institute of Petroleum, the Institute of Fuel and the A.B.C.M. for advocating measures to the Government by which the shortage of trained chemical engineers might be alleviated, have already resulted in the granting of a considerable additional number of State bursaries for post-graduate courses in chemical engineering.

The executive's gratitude to Mr. Norman Neville and to Dr. Hoblyn is shared by all members, many of whom have expressed to the committee their appreciation of the unfailing courtesy and attention which the permanent officers have shown towards them.

Officers for the Year

Honorary officers for 1945/46 were re-elected as follows: *Chairman*, MR. KEITH FRASER (W. J. Fraser & Co.); *vice-chairman*, MR. W. R. BESWICK (Ashmore, Benson, Pease & Co.); *treasurer*, MR. W. S. KNIGHT (Kestner Evaporator & Engineering Co.). The executive committee remains as last year, except that MR. H. V. YORKE (Bennett, Sons & Shears) comes in in the place of Mr. Henshaw, who has resigned. MR NORMAN NEVILLE continues as director and DR. E. H. T. HOBLYN as secretary.

Sir F. Bain's Speech

At the luncheon which followed the general meeting, there was a company of some 200 members and guests.

SIR FREDERICK BAIN, M.C., lately chairman of the Chemical Control Board, Ministry of Supply, proposing the toast of the Association, said it was perhaps good that in the midst of a General Election it was possible to meet in this way quietly and, without political prejudice, to discuss practical affairs. He was glad to respond to the toast, firstly because Mr. Keith Fraser was an old personal friend; and, secondly, it gave him the opportunity of paying tribute to the great and valuable work which the members of the Association accomplished during the German war. Throughout those years there was never a serious hold-up for essential chemical plant—a record during the war in which they could take just pride, and for which the country could be grateful. The third reason why he was pleased to propose this toast was that as a chemical producer himself he in some way represented the customers of the Association. In the case of the chemical plant manufacturers and the chemical industry there was a special relationship and he welcomed the opportunity of taking stock together, for in the testing time ahead it would be necessary for the two sides to work together more closely than ever before.

Evaluating the tasks which lie ahead, Sir Frederick referred to the first and supreme task—the defeat of Japan. Then there was the rehabilitation of Europe; there was the supply of a world starved for years of essential commodities and machinery; and there was finally the task on which the success of all the others depended—that of putting our own worn and battered house in order.

The Sharing of Knowledge

During the German war, the Association had shown how it was possible for independent firms to get together and undertake propositions which would have been beyond the scope of any one firm alone. He did not know how far the members had exchanged special knowledge, but at any rate they had been prepared to share knowledge in a way which before the war would have been impossible. This sharing of knowledge, he said, had turned out to be a source of mutual strength. In the wide and infinitely expanding field covered by the Association, they had a record of which they could be proud: and now, besides the difficulties of staff, labour, and materials, there were other difficulties not so readily recognised. There was the danger of lassitude; we had to force ourselves to tackle new ventures and to investigate new ideas. There was also the danger of complacency. With more demands for our products than could be fulfilled, with taxation so devised that all excess profits quite properly went to the State, efficiency in unit production in many cases had had to be sacrificed to magnitude and speed of output.

We now had to recover, he continued, the British supremacy in salesmanship. Before the war we were a creditor nation and other countries had to buy from us, but to-day we were a debtor country with a population far greater than we could feed. We must im-

port to live and for that reason we must export our manufactured goods. But there was another side to the picture. We were a free people with a great tradition; and British industry would carry its proper share of the load in the future willingly and, in the long run, triumphantly.

Although we had lost our foreign investments there was to be set against that the masterly manner in which the war had been financed. Sir Frederick expressed strong commendation of the financing of the war—"a triumph of Treasury policy"—as well as of that body of devoted senior civil servants in the higher branches of the Treasury, and of the core of our Civil Service, which was unequalled in the world and was one of the great assets of this country.

The British working man also, he said, was still the best worker in the world, if he were fairly treated—and being British he would see that he *was* fairly treated! In the struggle for increased efficiency there must be no monkeying with the fair treatment of the worker. The increased efficiency needed must come from improved management and improved plant. Although in adaptability and inventiveness we had maintained our traditions there were instances where our efficiency of production had been shown to be considerably lower than it should be. That gap must be closed. In the field of chemical engineering and chemical manufacture, he was confident that it could be closed.

Possibilities of Grouping

There would be an insistent demand, he believed, from the less industrialised parts of the world for the establishment of chemical industry. That meant chemical plant. It was possible that the present maximum capacity of the Association could be fully utilised for plant in this country, but it would be at our peril if this home demand should deflect them from their fair share in the export market. The chemical manufacturing and chemical plant manufacturing industries had in this a common interest. Whereas from other and competitive countries individual organisations could submit complete schemes for comprehensive and complicated chemical processes to meet these demands, we were not quite in that same position in this country. There might have been—and he was delighted to hear the chairman question the statement he had just made—some noteworthy instances of co-operation between a number of firms to produce a comprehensive scheme, but it might be that that method would not effectively meet every case. For certain types of plant, the chemical plant manufacturers of this country were as good as any in the world, and it might well be that some well-continued and wisely planned groupings would be to the advantage of the industry and of the country. He had grounds for believing that to-day there was more likelihood than ever of achieving valuable and practical results from an examination of such a possibility.

The chemical engineer had, during the war, demonstrated triumphantly the significance of his place in modern industry. We in this country have been somewhat laggard in acknowledging that significance but no one questioned it to-day. The provision of means for training larger numbers of chemical engineers was now an immediately urgent problem for this country and the Association

The Chairman's Address

The chairman (MR. KEITH FRASER) responding, said the points mentioned by Sir Frederick Bain afforded material for a series of meetings of every technical and trade Association represented at the luncheon. What Sir Frederick had said as to the need for a real understanding between the consumer and the supplier was a logical economic fact. Chemical plant manufacturers welcomed heartily the offer of co-operation which had been made. The word "chemical" to the uninitiated might be subject to some misunderstanding because, in fact, chemical engineering was the basis not only of the light and heavy chemical industries, but also of petroleum refining, of edible oils, alcohol, plastics, synthetic rubber, fuel and, in fact, of everything we eat, drink or wear. There was, therefore, an immense responsibility on those who had to handle the equipment side in regard to the development of those major industries—the very essence of better living conditions in the whole world. Because of that very fact there was a vast market before them; there need be no fear that there would be a shortage of work for all engaged in chemical plant and chemical manufacture. For that reason, therefore, if the two sides could get away from the factors which had prevented collaboration in the past, there was some chance that this nation of ours would have its full share of the trade of the world to the betterment of world conditions and the furtherance of the objects which were part of the Atlantic Charter.

To-day we were wasting our time in being frightened of competitors, customers or anybody else. It was, of course, a great problem in working out the details to ensure that a trade secret should remain so as long as the possessor thereof felt it was necessary, and he felt sure that would be the wish of everybody. In that connection, the greatest tribute he could pay to the A.B.C.M. was to acknowledge the frankness with which they had worked with the plant manufacturers. It might be there was a specific contractor to whom the chemical manufacturer would like to entrust his secrets and it was for that reason that the development to which Sir Frederick had referred should be kept flexible so that that *integrity*, which was the essence of the whole thing, could be maintained.

Plant manufacturers were conscious of the

immense problems ahead, and it was fully appreciated that the export market should not suffer in any way. Personally he felt that this was a momentous period in the development of the relations between consumer and supplier and he was only too pleased that Sir Frederick had opened his arms in the manner he had because it was along these lines that the B.C.P.M.A. had been working for many years.

In proposing the toast of "The Guests," the chairman specially welcomed the members of the Indian Industrialists' Delegation, the representatives of the various Government departments, and the officials of many engineering and scientific institutions.

The Board of Trade's Part

SIR CHARLES BRUCE-GARDNER (Chief Executive for Industrial Reconversion), in response, said he appreciated the entertainment all the more because he felt he was taking part in the wedding feast of the suppliers and users. The Board of Trade, he said, intended to do all it possibly could to assist in bringing about a smooth and orderly conversion of industry from war to peace. It was the duty of any Government department so to create conditions that industry itself could carry out the multitude of necessary jobs. Industry was not static. It was all very well for those who talked about taking over this or that; they were taking over something that had been created and which was running. He personally believed that the maximum and best and quickest development would come from allowing individuals to develop themselves and to develop their businesses. While we still had the Japanese war on our hands it was not possible to relinquish all controls. It was, however, part and parcel of the policy of the Board of Trade, in so far as it controlled and regulated, to release controls as quickly as possible.

The Board had already gone a long way towards allocating the Government war-time factories. Those factories which had been released had already been regulated and it was the job of the Board of Trade to allocate them to the firms which would make the best use of them and probably employ the greatest amount of labour.

Machine tools were being disposed of at the rate of 300 or 400 per week and that number would be doubled shortly. As Government factories were released, so more and more of these machine tools would be available for industry. It was a golden opportunity for many engineering firms in this country to acquire these machine tools at what he considered to be an attractive price. As regards export licences, Sir Charles said that action was being taken in a very much bigger and quicker way. There was an exception in the case of certain goods which were in short supply, but generally speaking there was now a great deal of freedom.

The Board of Trade was fully conversant with the need of industry to get key men back out of the Services and the Board would do all it could to assist in that connection. At the same time, it was also necessary to keep in the Forces a percentage of men for essential services which must include some key men required by industry.

On the all-important question of building and building labour, Sir Charles said it was necessary to bear in mind the essential needs of housing, although he was one of those who thought we should not think too much of houses at the expense of new buildings for industrial purposes. The Board of Trade looked upon itself as the champion of civilian industry in the same way that those departments which, during the war, had to look after munitions regarded themselves as the champions of the Services.

Commenting on the remarks by Sir Frederick Bain regarding co-operation between the producer and the consumer, he said he would like also to add the Government. He looked upon those three as representing a three-legged stool: if one leg were taken away the whole thing collapsed. Therefore, the Board of Trade would play its part to help and be one of the legs of the three-legged stool.

SIR SULTAN CHINO (Member of the Indian Industrialists' Delegation) also made a brief reply on behalf of the guests.

Filter Manufacturers

Formation of a Society Proposed

ONE of the most vital things in the national war effort has been the provision of adequate filters for air, fuel, oil, water, chemicals, etc. The effective life of British equipment has been several times longer than that of similar enemy equipment, due to the protection which filter manufacturers have provided. The war-time growth of the filtration industry has been considerable, and, because of its probable increase in importance it is proposed to form a Society of Associated British Filter Manufacturers. It is hoped that the society will act as a medium for negotiation with Government departments and other bodies and also deal with matters of general technical interest. As filtration covers so many diverse fields it has been thought advisable to subdivide the Society into sections which will handle their own particular problems.

A temporary organising commitee has drawn up a draft constitution which will be submitted to the inaugural meeting of the society. This will be held at the offices of Peat, Marwick, Mitchell & Co., 94/98 Petty France, Westminster, S.W.1, at 2.30 p.m. on July 6, 1945. Any interested concern should communicate with Peat, Marwick, Mitchell & Co.

A Future for the Chemical Industry*

The Proper Utilisation of Resources

by DR. N. LEVY

THE chemical industry and its personnel have carried out a splendid job during this war, a job which under the ultimate direction of Government control has resulted in enormous and essential increases in all the arms of war. If one mentions only the more dramatic, such as the tremendous increase in the output of synthetic nitrates and magnesium products which have expanded our fertiliser policy, and the manufacture of entirely new medicinals such as penicillin, it will show what the potentialities of this great industry are for post-war policy.

I want to say here that these advances are looked upon with mixed feelings by manufacturers and by people high up in their professions who ought to know better. In another place recently fears were expressed about the effect of the widespread application of such things as heparin and penicillin, in increasing what is a great problem already, by creating a greater pressure of population, and the question was raised as to whether it was an entirely good thing to allow Madagascans, Indians or Chinese to live longer as a result of their use. The doubts which have been so expressed are really the most absurd expression of the industrialist's fear of an expansionist economy, a fear which ignores completely the fact that pressure of population, wherever it occurs, is the result of low productivity and backward manufacture and that the chemical industry can in many cases supply the answer.

The Value of Controls

Among the least dramatic but none the less important examples of the contribution made by the chemical industry has been the conservation of previously wasted materials and previously ignored materials. In this country a really ingeniously constructive attempt has been made to base our industries on home-produced materials and to select our imports carefully. In this the Government controls have done a good job despite their limitations, and we must see that the question of controls in industry is not made simply a subject of quarrel between firms. This only brings out the limitations of these controls and does not display their ultimate value when overhauled.

The great tasks achieved in the chemical and allied industries could have been greatly improved, and improved more quickly, had there been, as there is in the engineering industry, a widespread scheme of technical committees. Within our industry these committees have played a minor part, and that is something which has to be put right in the future, especially as when the war ends the patent excuse of security will no longer apply. An illustration of this is provided by a recent advertisement in which a firm asked for a man who could interest the workpeople in their job!

The most blatant examples of backwardness have been in the aluminium industry, based on lack of bauxite and the inability to import. There are in existence processes based on clays, which give not only aluminium but also cement, which could and should have been developed during the course of the war. Similar examples have occurred with regard to sulphuric acid. That illustrates how the question of imports and production from home-based materials should have presented us with a better picture and avoided the importation of large quantities of pyrites. Both the strength and weakness of the chemical industry bring out the need for a review of our natural resources—mineral, waste, and others—for the purpose of integrating them into post-war requirements and to see that the chemical industry is the handmaiden of export expansion and of an adequate import policy.

The Coal Problem

For the post-war period, and equally for the present stage of the war, coal and its price is an outstanding question in our industry. This has been alluded to by industrial leaders with particular reference to the high wages being paid to operatives in that industry. It is fantastic to suggest that this product, our most fruitful single raw material, can be cheapened simply on the basis of a return to pre-war wages for miners. The American parallel of threefold productivity with very much higher wages itself dispels that illusion. The emphasis that is being laid by the technical Press on turning coal into other products, while technically stimulating to the chemical industry, can be dangerous if it obscures the need for mechanisation and national ownership and for planning the use of this material. The chemical industry needs this mechanisation and this national ownership as a man needs bread and it is the primary question within the industry. Only when we have these can we plan the use of coal for power, for fuel, or as a raw material; and only then will it be possible to institute stronger measures for the full recovery of its by-product value and to lay special em-

* An address delivered at the annual meeting of the Association of Scientific Workers, held last month.

phasis on the " aromatics " which are necessary to the plastic industry. Finally, these things would enable us to do new things in the carbonisation industry and to turn to the production of acetylene from carbide manufacture for artificial fertilisers and to start using this—the first and largest of our mineral riches—in a rational scientific way.

Agricultural Questions

The integration of agricultural products with the building up of a great organic chemical industry is another big problem for the immediate future. It has come about during the war that we have increased the output of synthetic nitrogen for explosives. The continued use of this for the purposes of peace is already causing heartburnings in high circles. If this country is to play its part not only in providing for agriculture but also in exporting products to Europe and Asia in large quantities, then these plants must not be allowed to fall into disuse. They must be used and I think it may be suggested that as the civil servant has made such a good job of them during the war he will not be found wanting in the post-war period.

Perhaps the biggest single question in agriculture is the vastly increased use of lime and the bringing about of such mechanisation as will bring millions of acres of land back to fertility. There is, among farmers, the conception that lime has to be burned and that ground limestone is not so good. At least several years in the post-war period will be spent on deciding this question, and that will involve the use of a large amount of ground limestone. I believe that ground limestone will not in fact be found any different in its effect on soil from burnt lime, on which a great deal of coal is wasted.

There will, of course, have to be very large and increased imports of phosphates and potassium salts; but we should see that the phosphate resources of this country, which are little used at present, are brought into operation. I refer in particular to the need for utilising human sewage by processes which give not only low-grade fertilisers but also methane and hydrogen sulphide for the production of sulphuric acid. There is also a need to increase the output of steel—something which it has been impossible to achieve during the war—because that can in itself bring about a larger output of phosphatic products in the shape of basic slag. Little attention has been paid to the possibility of the utilisation of agricultural crops and waste for organic chemistry. I believe that the use of these would effect an immediate increase in the heavy organic chemical industry, a fact which is made more apparent by the requirements of the plastics industry.

Other industries lay emphasis on the import of crude oil into this country and the use of petroleum refining as a chemical source, and agitate for the repeal of the hydrocarbon oil duty to give it a start. It is necessary for us to see that the heavy organic industries, so far as this country is concerned, are based on a wide variety of materials: coal, agricultural products, waste, and petroleum refining. Given this broad view as the basis of the heavy organic chemical industry, we can decide what steps should be taken in the way of repealing the hydrocarbon oil or other duties. Myself, I believe that the one-sided approach which is made to this question brings out the need for a national review and national control, at least of imports, with a view to developing eventually in this country a plastics industry of one million tons a year—about half the total production of plastics in the U.S.A., but thirty times as great as the pre-war output here and many times greater than our present output. This question is of great importance for the post-war period. The decision must be made as to whether we shall have a plastics industry based on small luxury articles or whether we shall have an industry capable of effecting mass production and playing a part in the fabrication of heavy gear, textiles, prefabricated houses, and transport.

I should like to conclude by saying that the outlook is bright given adequate public interest and goodwill. We must bring our technique up to date and our experts and workers to the fore. That means ceasing to look upon the problem of the chemical industry simply as a technical one, but bringing to bear instead upon the problem all the knowledge and technique of the industry's workers through the machinery which exists in this and other industries.

DDT IN CANADA

A large-scale test of DDT was carried out last month over an area of about 100 sq. m. in the forest country north of Fort William, Ontario, Canada. Aircraft were specially fitted out to spray the valuable timber stands threatened with destruction by the spruce budworm, which already has devastated large sections. This offensive follows an experiment recently conducted at Algonquin Park, where DDT was sprayed by autogiro in an attempt to assess all its possibilities, and all insects were reported killed.

Production of DDT has been started at Elmira, Ont., by the Naugatuck Chemicals division of the Dominion Rubber Company, the only manufacturers in Canada. Only recently has the Government permitted release of this insecticide by regular insecticide manufacturers through ordinary trade outlets. A number of problems relative to correct proportions and timing still remain to be worked out, so that general application of DDT to field crops in Canada may be delayed somewhat.

Parliamentary Topics

Oil Exploration, Formby

IN the House of Commons last week, Mr. Kirby asked the Minister of Fuel and Power whether he could make a statement as to the progress in the search for oil at Formby, Lancashire, a licence for which was given to the D'Arcy Exploration Company in 1939; and what effect it has had, or is likely to have, upon the demand for labour in the area.

Major Lloyd George: A considerable amount of drilling, both of shallow wells and of deep test bores, has been carried out in the licensed area and a small production of oil has been obtained since 1939. The demand for labour for this type of exploratory work is not large—at no time have more than 30 men been employed—and I cannot at present give any indication of what the future demand might be.

Cement Price Control

Sir R. Tasker asked the Minister of Works to what extent the price of cement was controlled by his Ministry; and whether the officials of his Ministry examine the books of any cement manufacturer to satisfy themselves that there was justification for the increase in the cost of cement due to the advance in prices of labour and fuel.

Mr. Sandys: As the House has previously been informed, the control of the selling prices of cement is exercised by the Ministry of Works under a voluntary arrangement with the industry. The financial accounts of the manufacturers are examined when necessary.

Essential Oils

Mr. A. Edwards asked the Minister of Food whether it was intended to relax the controls on essential oils in the near future.

Colonel Llewellin: My Department is already preparing for the orderly removal of controls on individual oils as soon as possible and will do so in consultation with the trades concerned.

Burnley Magnesium Factory

Mr. Burke asked the Minister of Aircraft Production to what use he proposed to put the Magnesium Elektron factory near Burnley, which cost over £4,000,000 and has been idle for many months; whether any of the plant and fittings had been disposed of and, if so, under what terms.

Mr. E. Brown: This factory was built and equipped for the special purpose of producing magnesium, and although it is not now being used for that purpose, I cannot say that it will not be so used again. Even if it were for disposal it would not, owing to its special construction and the heavy plant which it contains, be readily made available for other forms of production. None of the plant and fittings has been disposed of. Steps have been taken to use for storage purposes a considerable area of the more open parts of the factory.

Better Use of Coal

Mr. Wootton-Davies asked the Prime Minister whether he would appoint a commission to inquire into the better use of coal and the advisability of prohibiting the export of raw coal and the burning of raw coal in domestic grates, so as to retain the by-products to manufacture here.

The Minister of Labour: The domestic use of all kinds of coal is at present being examined by the Fuel and Power Advisory Council, under the chairmanship of Sir Ernest Simon. It is not considered that prohibition of the export of coal in the raw state would be in the national interest, but the point raised will be taken into account in connection with our coal export policy.

Scientific Instruments

Mr. Salt asked the Prime Minister whether arrangements could be made for the well being of the scientific instrument-making industry to become the responsibility solely of his own department; and whether he could make an early announcement as to how this industry was to be protected in the post-war period and enabled to benefit from the closing down or control of the scientific instrument making industry of Germany.

Mr. Butler: This is all very important, but my right hon. Friend the Prime Minister is of the opinion that it would be better to get the General Election over before arriving at final decisions.

Industrial Psychology

Major Procter asked the Minister of Education whether his Department would prepare and supply to headmasters and headmistresses apparatus and instructions on how to apply the methods of industrial psychology to children of school-leaving age and so help such children to make a right choice of their careers.

The Parliamentary Secretary to the Ministry of Education: This problem is at present being examined by a committee of industrialists and educationalists under the chairmanship of the Secretary of the Ministry of Labour and National Service. The publication of their report is expected shortly.

Bollington U.D. Council, near Macclesfield, has received an inquiry with regard to the purchase of premises suitable for the manufacture of light chemicals by Messrs. N. Evans & Rais, Ltd., Manchester.

Personal Notes

MR. R. A. ALDRED has been appointed a director of the Beralt Tin & Wolfram Co.

MR. N. CLARKE has been appointed assistant secretary of the Institute of Physics.

DR. ARCHIBALD CLOW, who has been awarded this year's Blackwell Prize, is assistant in the Chemistry Department at Aberdeen University.

SIR W. MURRAY MORRISON succeeds Major R. W. Cooper as chairman of Alliance Aluminium Holdings, Aluminium Corporation, and International Aluminium.

MR. T. W. STAVELEY, works manager of Wigglesworth's, Ltd., manufacturing chemists, of Westhoughton, Lancs, has retired after being with the firm since 1912.

MR. C. G. R. ASHTON is the new vice-chairman of Thomas De La Rue & Co., Ltd., and MR. F. WARDLEY (managing director of De La Rue Stationers, Ltd.) has been co-opted on to the board.

DR. FRANK WILD, of Downing College, Cambridge, has been elected into a fellowship at the college. He was in the first class of the Natural Sciences Tripos in 1938 and in successive years was awarded the Gordon Wigan Prize in Chemistry and a W. A. Meek Scholarship.

MR. A. D. BUCHART, who has had a long experience in the oil industry and who, as a research chemist, and in other capacities, has served in Burma, Iran and Iraq, has been appointed executive liaison officer to the Manchester Joint Research Council, which is representative of the Manchester University and the Manchester Chamber of Commerce.

Dr. T. H. Durrans.

DR. T. H. DURRANS, F.R.I.C., director of research of A. Boake, Roberts & Co., Ltd., has retired after 37 years' service. He is an authority on solvents and plasticisers and author of "Solvents," the sixth edition of which is in preparation. He was chairman of the London section of the Society of Chemical Industry in 1939-41. No successor has yet been appointed, and Dr. Durrans's advice will still be available to the company.

DR. J. N. DAVIDSON, a Fellow of the Royal Society of Edinburgh, Lecturer in Biochemistry at Aberdeen University, has been appointed to the staff of the Medical Research Council at the National Institute for Medical Research, London.

DR. E. R. H. JONES, who has been engaged for some time in the organic chemistry department of the Imperial College of Science and Technology, has been officially appointed (as from October 1) Reader in Organic Chemistry there.

Birthday Honours

The honour of knighthood has been conferred on MR. WILLIAM HUGH STOBART CHANCE, deputy-chairman of Chance Brothers, Ltd., Smethwick, and chairman of Fibreglass, Ltd.; and on MR. EDWARD WILLIAM SALT, M.P. for Yardley (Birmingham) since 1931, the energetic chairman of the Parliamentary and Scientific Committee.

New C.B.E.'s include MR. F. M. BIRKS, O.B.E., chief engineer to the Gas Light and Coke Co., and DR. J. W. MCDAVID, F.R.I.C., M.I.Chem.E., managing delegate director, Explosives Division, I.C.I., Ltd.

The O.B.E. has been awarded to the following: MR. ARTHUR BLOK, temporary principal scientific officer, D.S.I.R.; DR. H. W. WEBB, F.R.I.C., M.I.Chem.E., Principal, North Staffordshire Technical College, Stoke-on-Trent; while the India Office List includes the award of the O.B.E. to MR. D. C. RUSSELL, director of Ordnance Laboratories, Cawnpore, and to MR. H. WHEATLEY, director of the Cinchona Department, Madras.

The M.B.E. goes to MR. J. F. COWNIE, production engineer, Boots Pure Drug Co., Ltd.; MR. V. J. F. DEONNELLY, chief metallurgist, Acton Bolt and Fine Threads, Ltd.; MR. JAMES HARNAMAN, A.M.C.T., A.R.I.C., works manager, B. Laporte, Ltd.; MR. G. R. LLEWELLYN, manager, Liquid Fuel Department, Petroleum Board; MR. G. W. PRESTON, manager, Copper Development Association; MR. H. L. SATCHELL, manager, British Thomson-Houston Co., Ltd.; and MAJOR P. G. WICKENS, experimental Officer, Petroleum Warfare Department.

Recipients of the British Empire Medal include the following: ABLE SEAMAN FREDERICK LAWN, s.s. *Helium*, I.C.I., Ltd.; MR. E. E. LUCAS, assistant grade II, Chemical Defence Experimental Station, M.o.S.; MR. WILLIAM MCCULLOCH, superintendent.

Stewarts & Lloyds, Ltd.; MR. J. H. NAYLOR, production foreman, dyesuffs division, I.C.I., Ltd.; MR. WALTER OGDEN, process worker, I.C.I. Ltd., Blackley; MRS. MARGARET PATEMAN, forewoman, Enfield Zinc Products, Ltd.; MISS SYLVIA ROBERTS, assistant forewoman, I.C.I. (Metals), Ltd.; MR. R. H. RUSSELL, foreman, Drums, Ltd.; MR. F. J. SATCHWELL, grinder, Triplex Safety Glass Co., Ltd.; MR. LUKE SEVERNS, contractor road repairer, Staveley Coal and Iron Co., Ltd.; and MR. CHARLES WALKER, senior moulder, Edgar Allen & Co., Ltd.

Obituary

MR. ARCHIBALD WALKER, for many years a director of the Distillers Company, died at Newark Castle, near Ayr, on June 10, aged 86.

MR. ALEXANDER ALLISON REID, late managing director of the Alloa Glass Works Co., Ltd., died at Dollar, Clackmannanshire, on May 30, aged 67.

MR. ALFRED AYRE MELLOR, whose death at the age of 66 is reported from Montreal, was a vice-president of the Nichols Chemical Company. Mr. Mellor, who was born in Manchester, England, went to Canada in 1908.

DR. GADIENT ENGI-HOLLENWEGER, who died in Basle on May 19, aged 64, was the first vice-president of the CIBA from 1928 until his retirement, for health reasons, last year, after 40 years' service with the company. He was a doctor *honoris causa* of the Federal Technical Institute of Zurich as well as of Basle University, and an honorary member of the Swiss Chemical Society, the Society of Chemical Industry, and the Société de Chimie Industrielle. He had paid special attention to the development of dyestuffs and concentrated his efforts, in later years, on the technical management of the company's plants, both in Switzerland and abroad.

DR. HAROLD HIBBERT, D.Sc. (Manchester), Ph.D. (Leipzig), for 20 years Professor of Industrial and Cellulose Chemistry at McGill University, died at Philadelphia on May 13, aged 68. He was a leading exponent of the utilisation of forest products, and had won international fame for his work on lignin. Born and educated at Manchester, he went to America to work at the Mellon Institute soon after taking the D.Sc. degree. In 1914-19 he was adviser on chemical warfare to the British Mission at Washington. In 1919 he went to Yale where he remained until the foundation of the E. B. Eddy Chair of Industrial and Cellulose Chemistry at McGill. A year before he retired he received the signal honour of the honorary membership of the Society of Chemical Industry.

News from Germany

Reconstruction of Industry

THE French economic Press contains details about the reconstruction of industry in that part of Germany which is at present occupied by the British and American Armies. As regards the steel industry, steps have been taken to set this important branch of Germany's industry going as soon as possible in order to assist reconstruction activities on the Continent with special reference to a rehabilitation of the transport system. It is reported that Mr. Henry Kayser, the well-known American industrialist who became famous through his "Liberty Ships," has been charged with the supervision of the reconstruction of Germany's metallurgical industries. His technical adviser is Mr. R. J. Wyser, who recently resigned from the presidency of the giant Republican Steel Corporation.

Chemical Plant

In the course of recent weeks, British experts inspected a number of important German industrial chemical plants and reconstruction work was put in hand. It is expected that several well-known enterprises will soon begin to turn out goods needed by the occupation armies as well as by the civilian population. According to the reports referred to above, Bayer at Leverkusen, Merck at Darmstadt, the Badische Anilin at Oppau, and certain plants of the Leuna type at Ludwigshafen and Merseburg will be the first to produce a minimum quantity of pharmaceutical products, liquid fuels, and lubricants. Work has begun anew in four plants belonging to the Mannesmann-Röhrenwerke, for the reconstruction of Germany's water and gas supply system. At Oberhausen a plant has once again started the production of synthetic fertilisers.

In the chief industrial centres of the Ruhr, at Düsseldorf, Wuppertal—reported as having been "wiped off the map" by the Allied Air Forces—Remscheid, and Solingen, production is scheduled to attain 70 to 80 per cent. of the normal output in about four weeks. At Jena, the seat of Zeiss, work has also been put in hand and it is reported that American bombers are being fitted there with bomb-sights and other optical instruments. The Zeiss works are, for the time being, directed by British, Canadian, and American experts. At Mannheim-Ludwigshafen, workers of the I. G. Farbenindustrie are being housed and paid by the company's management in order that this man-power may be available as soon as plants are back in working order. A similar state of affairs is reported from other centres of production.

New Control Orders

Benzol and Coal Spirit

THE Control of Benzol and Coal Spirit Order, 1945 (S. R. & O. 1945, No. 681), which came into force on June 11, amends the Control of Benzol and Coal Spirit Order, 1944 (S. R. & O. 1944, No. 172), by increasing the prices at which controlled products may be sold or supplied. The quantity of naphtha and xylol which may be disposed of in each quarter without licence is increased to 300 gal. with a limit of 100 gal. as between the same parties. Producers, refiners, blenders and merchants may in each quarter, beginning on July 1, use or consume (otherwise than for refining) not more than 300 gal. of controlled products. The Order frees from price control benzol, coal spirit, naphtha, and xylol supplied in containers holding less than 5 gal. Slight alterations have also been made in relation to information required by the Minister.

Toilet Preparations

The Toilet Preparations (No. 5) Order, 1945 (S. R. & O. 1945, No. 663) exempts the containers of all controlled toilet preparations *supplied for export* from the necessity of being marked with the name and address of the manufacturer or licensed packer, and with an expression indicating that they are controlled goods. The marking provisions will continue to apply to all controlled goods supplied on the home market. The Order also contains a provision removing methanol from the schedule of "prohibited solvents," thus permitting duly authorised manufacturers to use methanol in the manufacture of controlled goods. The Order came into operation on June 18.

Cobalt Order Revoked

The Control of Non-Ferrous Metals (No. 19) (Cobalt) (Revocation) Order, 1945 (S. R. & O. 1945, No. 697), which came into force on June 18, revokes the Control of Non-Ferrous Metals (No. 10) (Cobalt) Order, 1942. Cobalt-bearing ores, concentrates and mattes, residues from which cobalt can be recovered, cobalt metal, cobalt oxides and certain cobalt salts are no longer subject to licence.

Chemical Controls

Ministry of Supply's Rejoinder

THE Ministry of Supply has answered criticisms concerning the control of chemicals which appeared last November in a report of the Select Committee on National Expenditure (*see* THE CHEMICAL AGE, November 18, p. 479).

Replying to these charges the Ministry says that research contracts have, in fact, been placed with over 30 firms. One firm, to whose "suspicious attitude" the committee had referred, was unwilling, the Ministry said, to allow investigations, which were a necessary preliminary to the placing of a research contract, to be made. Nor was it prepared to disclose the information to officers of any other Government organisation.

In answer to the charge that controls had strengthened the strongest interests in the chemical industry, the Ministry says: "If any such strengthening of particular interests has indeed occurred, it has arisen not from the operation of the controls, but from the paramount need to obtain essential supplies in sufficient quantities as expeditiously and economically as possible."

Irish Barytes

Acidulation Plant to be Installed

SUBSTANTIAL increases in the mining and sale of barytes, talc, and other minerals in Ireland, during the past year, were reported at the annual meeting in Sligo of Benbulben Barytes, Ltd. The chairman, Mr. J. J. Walsh, declared that the increases recorded would have been still greater but for a two months' stoppage of mining due to the electricity shortage. During the financial year the factory building had been doubled in size and was now in partial occupation, and accommodation and amenities for the workers were being extended. The existing plant, however, was inadequate to deal with the output, and it was not yet possible to conjecture when the new machinery which they had on order would arrive from the U.S.A.

Envisaging the post-war prospects of the company, Mr. Walsh pointed out that the maintenance of Irish talc on the English market depended on circumstances over which they would have little control. A vital point was that while the colour of the company's barytes was not all that could be desired, in the absence of acidulation, "its barium content was practically unapproached elsewhere." To perfect the product the company had decided to establish and acidulation plant at the earliest moment; and certain paint colours available in the district would be exploited for both home consumption and export. About 90 per cent. of the minerals produced by the company were exported, the chief customer being England.

Recent changes among the senior technical staff of the Government Laboratory include the resignation of MR. F. S. AUMONIER, superintending chemist, and the appointment of MR. J. R. NICHOLLS as chief superintendent. MESSRS. J. A. HEALD, A. H. RHEINLANDER, and B. A. ELLIS have been appointed superintending chemists.

Some Aspects of Microchemistry

Papers at the Manchester Meeting

A JOINT meeting of the Microchemistry Group of the Society of Public Analysts and the local branch of the Royal Institute of Chemistry was held in Manchester on May 26. A demonstration of apparatus and methods in use at the College of Technology, both for research purposes and in teaching, was introduced by Professor Kenner, who pointed out that in many ways, particularly since the outbreak of war, the College was at a disadvantage in teaching and applying the methods. Provision had been made for michrochemistry in the proposed extension to the College, but this had had to be postponed. In the meantime it was considered highly desirable to include representative small-scale methods in the courses. Although micro-quantitative analysis was out of the question, the semi-micro organic methods illustrated by one section of the demonstration were used. Inorganic qualitative analysis, using the methods advocated by van Nieuwenburg, had been practised at the College for some years, and illustrations of the methods were shown. It was hoped, before very long, to turn over to this form of inorganic qualitative analysis completely. Finally, an adaptation of an ordinary large balance to render it sensitive enough for delicate weighings was shown. These methods serve to illustrate how much could be done by any institution, even when working under considerable difficulties.

Physicochemical Methods

Dr. Cecil L. Wilson dealt with "Some Physicochemical Methods in Microchemistry." Physicochemical methods, other than those of first importance to organic chemists, such as molecular weight and density determinations, and purely instrumental methods of analysis such as polarography, have been rather neglected by the bulk of microchemistry, although many ingenious methods have been devised for carrying out physical measurements on extremely small quantities of material. Viscosity can be determined by adaptations of the normal rolling ball or Ostwald U-tube methods, or by noting the rate of rise or fall of a liquid in a capillary. Surface tension may be measured either by the extent of capillary rise, or by determining the applied pressure necessary to drive a small drop of the liquid along capillaries of varied section. Refractive index, one of the first methods to be applied on a micro scale (using the microscope) could now be measured by apparatus which deals with minute drops, using either glass prisms, or allowing the liquid to form its own prism.

The determination of trace amounts of sulphur dioxide, with special reference to the microdetermination of sulphur in ferrous alloys, was described by Mr. G Ingram. Existing methods of sulphur determination on the micro scale are not precise enough to be applied to this problem, so that a new approach has to be devised. This has been achieved by combustion of the sample, and conversion of the sulphur to sulphuric acid. This is then treated with copper oxide of high purity. The soluble copper which results is estimated as the complex with sodium diethyldithiocarbamate, using the Spekker absorptiometer. Sulphur in steels over a range of approximately 1.5 to 15 μg. can be estimated using this method, with an error of less than $\pm$ 3 per cent.

Miss M. Corner, in a paper on "Micro Methods in the Analysis of Cotton," described a selection of methods devised to meet the special needs of the industry. Owing to the wide variety of treatments to which the cotton fibre is subjected, contamination with a large range of chemicals is possible. In addition, dyes, antiseptics and similar materials, intentionally applied to the fibre, must be estimated. Metals in cotton fabric may often be detected *in situ* by a process of spotting or staining, the relation of the stain to the material frequently giving valuable additional information as to the source of the contaminant. Quantitative methods for metals such as copper, iron, and manganese necessitate the conversion of standard methods to deal with very small quantities present in a comparatively large sample.

CEYLON KAOLIN

The establishment of an export trade in kaolin in Ceylon is recommended by Mr. D. N. Wadia, former Government Mineralogist, in a memorandum on the post-war development of the mineral resources of the island. Even after making ample provision for the development of ceramic industries there are said to be almost inexhaustible deposits from which a trade in kaolin could be built up.

In its chemical composition, texture, colour and plasticity the refined china clay of Ceylon is said to be equal to the best Cornwall clays.

Investigations carried out by the Mineralogists' department disclose that in one area of Ceylon there is a rich kaolin field containing lenses and layers of pure white china clay, terra-cotta clays, ball clays, ochres and subordinate quantities of fire clays from six to 20 feet in thickness. It is estimated that in this area there are more than 9,000,000 tons of kaolin, and other localities are also said to be promising.

General News——From Week to Week

Shell-Mex and Unilever have each given £25,000 to the Help Holland Fund for relief in the Netherlands.

A leaflet, covering the use of polyvinyl chloride as an alternative to vulcanised rubber, has been issued by the M.O.S.

In the British Empire list of birthday honours this year, there are 61 employed in factories working for the M.O.S., of these no fewer than 22 are women.

The Postmaster-General announces that restricted air and surface mail services to Denmark are now available. A restricted service is also available to Yugoslavia.

The Shell Scholarship in Geology of £100 per annum tenable for three years has been presented to Aberdeen University by the Anglo-Saxon Petroleum Company, Ltd.

The Weardale Development Association is asking the Ministry of Fuel and Power to investigate the possibilities of manufacturing a new composite fuel, with moorland peat as a basic material.

The penicillin film made by I.C.I., together with the Therapeutic Research Corporation, recording that penicillin was discovered and developed by British scientists, has now been completed and is currently showing in London at the Warner Theatre, Leicester Square.

A pamphlet (No. 37) compiled by the Appointments Department of the Ministry of Labour and National Service, mainly for the benefit of ex-Service men and women, gives details about scope, pre-entry qualifications, training and opportunities for employment in physics, chemistry, biology, geology and metallurgy. (H.M.S.O., 3d.)

The Distribution of Industry Act is now in force and persons who are proposing to erect factories are required to inform the B.O.T. The object of this notification is to enable the Department to discuss with industrialists where, in the national as well as in their own interest, new factories should be located.

At a meeting of the governing body held recently in London and attended by representatives of trade and research associations, etc., and firms connected with the industry —cast iron, steel, and non-ferrous alloys including aluminium, magnesium, bronze and brass founders—it was unanimously agreed to re-open the British Foundry School as soon as possible. Birmingham is regarded as the most suitable centre and the meeting felt the School should be associated with an educational institution. A small committee of five has been appointed to consider ways and means of starting the school.

Speaking at the opening of a "Wealth from Waste" exhibition in Glasgow last week, Mr. T. Johnston (former Secretary of State for Scotland) said he hoped to see the day when coal would be sold "over the chemist's counter," when its valuable by-products would not go into the air as waste, and the unsightly coal "bings" would be turned over to industrial and economic uses.

The announcement by the Ministry of Education of a scheme for the award of Ordinary and Higher National Certificates in Applied Physics brings to fruition one of the recommendations in the report on Education and Training made by the Institute of Physics in 1943. Prospective students may obtain further particulars of the courses from their local technical colleges or local Director of Education.

Arrangements have been completed by the Scottish Agricultural Organisation Society, Ltd., whereby a guaranteed price of £3 5s. per ton is offered for well-dried bundled tangle-rods of seaweed harvested in the crofting counties within reasonable reach of a pier during the next two years. Given suitable encouragement, this should become a permanent industry offering constant employment.

Control of the use of factories and warehouses with an aggregate floor space of less than 3000 sq. ft. has been relaxed by the B.O.T. in Location of Industry (Restriction) Order 1945 (S. R. & O. No. 671) which revokes the Location of Industries (Restriction) Order, 1942. Licences are also not required in respect of the use of factories or warehouses which have been let or sold to the user by a Government department. It should be noted that this relaxation does not dispense with any obligation there may be to obtain licences under other Government controls.

Betro reports that among firms which have recently applied for founder membership are: William Blythe & Co., Ltd. Courtaulds, Ltd., Low Temperature Carbonisation, Ltd., and the Tunnel Portland Cement Co., Ltd. The list of ordinary members includes: I. Beer & Sons, Ltd., British Alkaloids, Ltd., The British Drug Houses, Ltd., The British Thomson-Houston Co., Ltd., Chance Brothers, Limited, Metal Scrap and By-Products, Limited, Metropolitan-Vickers Electrical Export Co., Limited, Mirvale Chemical Co., Ltd., The Mond Nickel Company, Limited, Murex, Limited, The Oilcakes & Oilseeds Trading Co., Ltd., Peter Spence & Sons, Limited, United Carborundum Grinding Wheels, Ltd., and Wallpaper Manufacturers, Ltd.

A course of elementary instruction in quality control methods will be given in London from July 16-20. It will consist of lectures, practical work and a demonstration at a factory. Those who complete it should be able to instal quality control in their own factories, and will have the foundations of a knowledge of statistical technique. The methods are applicable to a wide variety of production processes. Details from: Ministry of Supply, Advisory Service on Quality Control, Berkeley Court, London, N.W.1.

The value of licences issued to manufacturers on the Toilet Preparations Register, permitting the manufacture and supply of controlled goods, during the six months beginning July 1, will be calculated at the following rates: (1) for registered manufacturers participating in approved concentration schemes, 37½ per cent.; (2) for registered manufacturers not participating, 16⅔ per cent. No licence issued to a registered manufacturer will normally be for an amount less than £250.

The wholesale price index for all articles for May is 168.4 against 167.7 in April, and 166.1 a year ago. The figure for chemicals and oils rose from 150.5 to 150.7 (151.6) due entirely to advances in drug prices, aspirin and salicylic acid rising by 2½ and 4½ per cent. respectively. The index for iron and steel is unchanged at 189.4 (183.2), while there was an increase from 123.1 to 123.9 (127.6) in the case of non-ferrous metals. The rise in the price of coal by 3s. 6d. per ton as from May 1 brought the index up from 224.0 to 243.7 (201.5).

A Census of Production committee has been appointed by the B.O.T. "to report what additional information should be collected at future censuses of production and recommend amendments in the Census of Production Act." It is intended to take a census of production annually after the end of the war instead of at about five-yearly intervals common before 1939. The last census was held in 1935. At the same time, a committee was appointed "to consider whether a regular census of distribution should be instituted."

Foreign News

U.S. penicillin production (in million units) has increased from 394,000 in January to 405,000 in February and 460,000 in March.

The Educational Research Bureau for By-Product Ammonia, 50 West Broad Street, Columbus, Ohio, U.S.A., has changed its name to Coke Oven Research Bureau.

The Nyasaland Tung Growers' Association reports that tung could be made the second agricultural industry of the country. Last year output amounted to 72,770 lb. of Montana and 20,658 lb. of Fordii nuts. The harvest this year was estimated at 134,000 lb. of oil.

Magnesium chloride is now manufactured at four plants in India. Average pre-war consumption amounted to between 7000 and 8000 tons annually.

To celebrate the 220th anniversary of the foundation of the Soviet Academy of Science by Peter the Great, about 200 distinguished foreign guests were welcomed by Soviet Academicians on June 16. The Academy is now a vast organisation, controlling some 50 scientific institutions, engaged in both pure and applied research.

Tanganyika made strenuous and successful efforts to increase production of beeswax in the early days of the war and a record output was achieved in 1943, when it was most needed. It has been used extensively in armaments, bombs, and aircraft building, and the territory hopes to maintain a high output for some time.

A grant of £100,000 for the development of a cinchona research organisation has been made under the Colonial Development and Welfare Act. At the outset, the organisation will be based on the East African Research Institute at Amani, its task being to advise on and co-ordinate work on cinchona in East and West Africa and to keep contact with similar work in other Colonies.

The first aluminium company to operate a plant in Mexico is to be established by the Reynolds Metal Company, together with the Banco Nacional de Mexico. The new enterprise is called Reynolds Internacional de Mexico and will produce aluminium sheet and plate; it also intends to enter the field of fabrication. As there are no known bauxite deposits in Mexico, aluminium metal will be brought in from the United States.

The latest leaflet issued by the POWER-GAS CORPORATION, LTD., Stockton-on-Tees (Ref. H.P.345) describes and illustrates hydrogen production plants built by the company and working on the steam-iron process. The plant illustrated makes use of the cheap and easily obtainable producer gas as a reducing medium, instead of water gas, and both low cost of production and high efficiency in terms of quantity of reducing gas per volume of hydrogen made are claimed. Simple mechanical operation and a convenient and economical wet purification system for the hydrogen produced are other useful features of the process. The carbon monoxide content of the purified hydrogen can be removed to whatever extent is required.

Forthcoming Events

June 30.—The Association for Scientific Photography. Alliance Hall, Westminster, S.W.1. 2.30 p.m. Mr. Harold White: "Make the Photograph Tell a Story."

July 12 and 13. Society of Chemical Industry. Annual general meeting. July 12. Chemical Society's Rooms, Burlington House, Piccadilly, London, W.1. 10.30 a.m., meeting of chairmen and hon. secretaries of sections and groups; 2.15 p.m., meeting of council. July 13: The Royal Institution, Albemarle Street, London, W.1. 10.30 a.m. business meeting; 11.30 a.m., President's address; 12.30 p.m., lunch at the Savoy Hotel; 3 p.m., presentation of the Society's Medal to Viscount Leverhulme and Medallist's address; 4 p.m., tea in the Long Library.

Company News

The British Thermostat Co., Ltd., reports a net profit, for the year to January 31, of £22,612 (£20,924). The dividend is maintained at 18½ per cent.

Fullers' Earth Union, Ltd, reports a net profit, for the year to March 31, of £22,792 (£22,483). The dividend is 15 per cent. (same). The figures given in our issue of June 16 were incorrect.

To provide additional capital for expansion and development, **Lacrinoid Products, Ltd.,** propose to issue 300,000 new shares at 2s. each at 4s. a share. The new shares will be offered to shareholders in the proportion of three new shares for every 10 shares now held.

Lever Brothers & Unilever, Ltd., announce that as a preliminary to the resumption of pre-war relations between the company and Lever Brothers & Unilever N.V., the principle of identical composition of the two boards, which could not be observed during the war, has again become operative.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Satisfaction

LAFARGE ALUMINOUS CEMENT CO., LTD., London, W. (M.S., 23/6/45.) Satisfactions, June 1, of two mortgages registered February 27, 1926.

Receivership

DURSTON LANG & CO., LTD., London, W., manufacturers of fire extinguishing appliances. (R., 23/6/45.) D. A. Clarke, 9 Basinghall Street, E.C. May 23.

New Companies Registered

F. G. Langsmith & Co., Ltd. (396,131).—Private company. Capital £500 in £1 shares. Manufacturing, research, dispensing and analytical chemists and druggists, etc. Subscribers: W. G. Robertshaw, H. B. Pollard. Registered office: The offices of Chambers, Tregoning & Robertshaw, Brighouse, Yorks.

Chemical and Allied Stocks and Shares

GENERAL Election uncertainties continued to limit business in Stock Markets, although firmness was maintained in British Funds, and movements in industrial shares did not exceed more than a few pence. Imperial Chemical firmed up to 39s. 1½d., and Dunlop Rubber changed hands around 50s. 6d. Turner & Newall strengthened to 82s. awaiting the interim dividend, although the prevailing view is that any increase in dividend is likely to be left until the final payment for the year. The units of the Distillers Co. were around 116s. 3d. awaiting the results.

There was again considerable activity in British Drug Houses shares, which have risen afresh to 37s. on further consideration of the results; the assumption in the market is that when it is decided to raise more capital, it is likely to take the form of an offer of additional shares on favourable terms to shareholders. Borax Consolidated were firmer at 41s. 9d., with British Oxygen steady at 86s. 3d., but elsewhere British Aluminium eased to 42s. 9d. The higher base metal prices drew attention to a number of shares, improvement being recorded by Amalgamated Metal at 19s. 4½d., and Metal Traders at 25s. 3d. Goodlass Wall remained under the influence of the dividend and were active around 21s. 10½d. Metal Box shares moved higher at 90s. 6d.

Shares of companies connected with plastics received rather more attention, De La Rue being £10 11/16, pending the full results. Lacrinoid Products 2s. ordinary have been steady at 5s. 6d. on the new capital proposals, and Catalin shares changed hands at close on 7s., while Erinoid 5s. ordinary were 11s. 6d., and British Industrial Plastics 2s. ordinary 6s. 10½d. Electrical equipments were generally firm, particularly Siemens, which rose to 36s. 6d. on further considerations of the results, while General Electric were 95s. 9d.

In other directions, Burt Boulton changed hands at 27s. 6d., Cellon 5s. ordinary were maintained at 26s., and W. J. Bush remained held firmly and quoted at 75s. In front of the dividend announcement, British Glues 4s. ordinary continued to change hands around 10s. 6d. Britsh Match were more active around 42s. 6d. and, in other directions, B. Laporte kept firm at 87s. Business at 6s. 9d. was recorded in Leeds Fireclay 10s. ordinary. Morgan Crucible 5½ per cent. first preference continued at 27s. and the 5 per cent. preference at 24s. 6d. Monsanto Chemicals 5½ per cent. preference were 23s., and Greeff-Chemicals 5s. ordinary 9s. 3d. Fisons ordinary were 50s. 6d., and Blythe Colour 4s. shares again changed hands around 20s.

The iron and steel section showed firm-

ness, with Stewarts & Lloyds 55s. 7½d., and Babcock & Wilcox 56s., but Ruston & Hornsby eased to 51s. 9d. Textiles have been aided by the payment on account of arrears on Bleachers preference, which moved higher at 24s. 3d. with the ordinary units better at 13s. 4½d. British Celanese, after 33s. 9d. however, eased to 33s. 4½d. despite the news that a big block of shares from the estate of the late chairman has been acquired by an influential group. In other directions British Plaster Board became less firm at 37s. 3d., and Associated Cement eased to 58s., while Tunnel Cement were 43s. 6d. "ex" the reduced payment. Elsewhere, Boots Drug receded to 55s. 9d., and Timothy Whites to 41s. 9d., while Sangers were 30s. 9d. Triplex Glass firmed up to 41s. 3d., and United Molasses were steady at 43s. Oil shares eased, Shell being 83s. 9d., and Burmah Oil 85s. 7½d., but Apex were better at 29s. xd., maintenance of the interim dividend at 12½ per cent. being well received in the market.

British Chemical Prices

Market Reports

VALUES are steady to firm in most sections of the London chemical market, with new business during the past week on moderate lines. Deliveries are going forward steadily and the price position throughout the market is firm. Among the soda products there is a steady call for both the solid and liquid grades of caustic soda, while the call for deliveries of soda ash and bicarbonate of soda has been on a fair scale. There has been a moderate volume of new inquiry for industrial refined nitrate of soda and a fair weight of new business has been placed in Glauber salt and salt cake. Offers of bichromate of soda are being steadily absorbed, and there is a continued demand for yellow prussiate of soda. Existing orders for the hyposulphites of soda are being steadily drawn against and the market is well maintained. In the potash section permanganate of potash remains firm and a steady movement into consumption is reported. Solid caustic potash is being distributed to priority users at the official prices, while offers of the liquid continue on a very restricted scale. A steady inquiry is reported for acid phosphate of potash. In the coal-tar products market a fair trade is passing in pitch, chiefly for home consumption. The recent advance in price rates has had very little effect on market activity in the benzols and toluols, and the demand for the naphthas and xylols is certainly not less than that existing before the increased rates came into operation. There has been no change in the position of the anthracene oils, which are firmly held and in steady request.

MANCHESTER.—Following last week's sharp price advances in the lead products, oxides of zinc, and the light coal-tar products, no fresh change of any consequence has occurred in chemical prices on the Manchester market during the past week, though the undertone in most sections keeps firm. New business during the week has included a certain amount for overseas markets and the volume of this is expected to show a further improvement in the near future. There is steady pressure for supplies of the soda compounds and other leading heavies against home-trade contracts, and fresh business covering a fair aggregate quantity has been placed. In the tar products, crude tar and creosote oil are in steady demand, while benzol and toluol are the most active among the light materials.

GLASGOW.—Chemical merchants and manufacturers in Scotland report a spate of inquiries from nearly ever country in the world, but particularly from Turkey, Spain, India, and Malta, to quote one merchant's lists of outstanding markets. To a great extent these inquiries cannot be satisfied since export licences are now being very carefully allocated and only a limited volume of exports authorised. In some cases this is an obvious protection of home interests as in the case of citric acid, which is in intensely short supply at home. But in other cases the refusal to permit export is more obscure and would appear to be guided by other motives since, in some instances, merchants do say that the goods are available. Shipping space may be a factor. Some trade continues to be very active in general chemicals and prices remain firm.

Price Changes

Benzol.—Per gal. ex works: 90's, 2s. 6d.; pure, 2s. 8½d.; nitration grade, 2s. 10½d.

Toluol.—Pure, 3s. 0½d. per gal.; 90's, 2s. 4½d. per gal.

Xylol.—For 1000-gal. lots, 3s. 3½d. to 3s. 6d. per gal., according to grade, d/d.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

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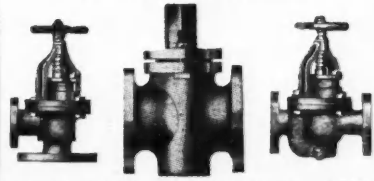

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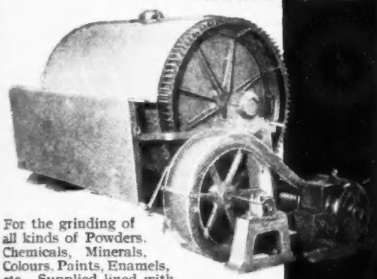

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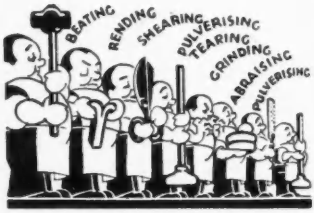

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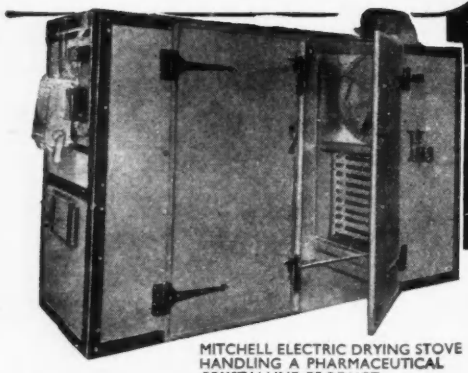

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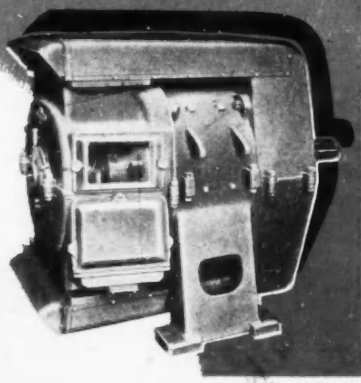

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